

THE AMERICAN JOURNAL OF PHYSIOLOGY

VOLUME 153

April-June 1948

BOARD OF PUBLICATION TRUSTEES

A. C. IVY, *Chairman*

R. F. PITTS

FRANK C. MANN

EDITORIAL BOARD

J. H. COMROE, JR.

R. W. GERARD

R. F. FITTS

HALLOWELL DAVIS

F. G. HALL

J. P. QUIGLEY

D. B. DILL

W. G. HAMILTON

DAVID RAPPORt

J. A. E. EYSTER

C. N. H. LONG

H. P. SMITH

MILTON O. LEE, *Managing Editor*

THE AMERICAN PHYSIOLOGICAL SOCIETY
Washington, D. C.

COPYRIGHT 1948, BY
THE AMERICAN PHYSIOLOGICAL SOCIETY, INC.

WAVERLY PRESS, INC.
BALTIMORE, MARYLAND
Made in United States of America

*Murad
dict*

Contents of Volume 153

No. 1. APRIL 1948

PROOF OF A HORMONAL MECHANISM FOR GASTRIC SECRETION—HUMORAL TRANSMISSION OF THE DISTENTION STIMULUS	<i>M. I. Grossman, C. R. Robertson and A. C. Ivy</i>	1
HYPoxIA AND TEMPERATURE REGULATION OF MICE, DOGS AND MAN	<i>F. J. Kottke, J. S. Phalen, C. B. Taylor, M. B. Visscher and G. T. Evans</i>	10
ADRENAL CORTEX AND ALTITUDE TOLERANCE	<i>F. J. Kottke, C. B. Taylor, W. G. Kubicek, D. M. Erickson and G. T. Evans</i>	16
ANTIHORMONE PROPERTIES OF UREA-DENATURED SHEEP GONADOTROPIN	<i>Fritz Bischoff</i>	21
FACTORS INVOLVED IN FOOD AND WATER INGESTION IN THE DOG	<i>J. W. Archdeacon and R. S. Allen</i>	27
B VITAMIN REQUIREMENTS WITH ADVANCING AGE	<i>C. A. Mills</i>	31
RAT COLONY TESTING BY ZUCKER'S WEIGHT-AGE RELATIONS	<i>H. Gray and T. Addis</i>	35
ORALLY ADMINISTERED UREA AND AMMONIA, AND UREA CONCENTRATION IN THE BLOOD OF CATTLE AND SHEEP	<i>James S. Dinning, H. M. Briggs, W. D. Gallup, H. W. Orr and R. Butler</i>	41
KIDNEY AND BLOOD SUGAR, AND HEMOGLOBIN CONCENTRATIONS BEFORE AND AFTER EVISCERATION OR PARTIAL HEPATECTOMY	<i>Roger M. Reinecke, Guilford G. Rudolph, Melvin J. Bryson and Leo T. Samuels</i>	47
THE KIDNEY AND NITROGEN METABOLISM	<i>E. Mylon, E. R. Smith and P. Goldstein</i>	55
FLUID SHIFTS DURING EXPOSURE TO ACCELERATIONS: RAPID LOCAL CHANGES UNDER NEGATIVE G	<i>Floyd Stauffer and Chester Hyman</i>	64
SEQUENTIAL CHANGES IN OXYGEN CONSUMPTION DURING OLIGEMIC AND NORMOVOLEMIC SHOCK AND THEIR MEANING	<i>Robert S. Post, Paul H. Visscher and Carl J. Wiggers</i>	71
PENTOTHAL SODIUM AND BLOOD GAS TRANSPORT	<i>Kenneth E. Penrod and A. H. Hegnauer</i>	81
SUSCEPTIBILITY OF CATS AND DOGS TO PROGRESSIVE ANOXIA	<i>Ralph W. Stacy, W. V. Whitehorn and Fred A. Hitchcock</i>	87
METABOLIC CHANGES OF THE RESTING POTENTIAL IN RELATION TO CO ₂	<i>Abraham M. Shanes</i>	93
REPEATED DENERVATION AND NEUROMUSCULAR FUNCTIONS	<i>J. A. Morgan, J. D. Thomson and H. M. Hines</i>	109
ACETYLCHOLINE AND ACTIVITY OF SENSORI-MOTOR AND SUPPRESSOR CORTICAL AREAS	<i>Sibyl Beckett and E. Gellhorn</i>	113
AGE AND LETHALITY OF DI-ISOPROPYL FLUOROPHOSPHATE	<i>Alfred M. Freedman and Harold E. Himwich</i>	121
ANTITHROMBIC AND ANTIPROTEOLYTIC ACTIVITY OF ALPHA TOCOPHERYL PHOSPHATE	<i>K. I. Zierler, D. Grob and J. L. Lilienthal, Jr.</i>	127
DOSAGE OF XANTHOPTERIN AND RESPONSE IN HEMAPOIESIS	<i>Earl R. Norris and John J. Majnarich</i>	133
RESIDUAL LUNG VOLUME BY THE METHODS OF HELIUM SUBSTITUTION AND VOLUME EXPANSION	<i>Thomas L. Willmon and Albert R. Behnke</i>	138
BILE DIVERSION AND FECAL FAT AND NITROGEN EXCRETION	<i>J. R. Heersma and J. H. Annegers</i>	143
BLOOD LEUCOCYTE LEVELS OF ADRENALECTOMIZED AND NORMAL RATS FOLLOWING TYPHOID VACCINE	<i>Lena A. Lewis and Irene H. Page</i>	148
ARTERIAL INFLOW IN THE DOG'S LEG AFTER VENOUS OCCLUSION	<i>D. E. Gregg, W. H. Pritchard and R. E. Shipley</i>	153
RENAL HYPEREMIA AFTER INTRAVENOUS INFUSION OF ADENYLYLIC ACID, ADENOSINE, OR ADENOSINE TRIPHOSPHATE IN THE DOG	<i>C. Riley Houck, Richard J. Bing, Frank N. Craig and Frank E. Visscher</i>	159

STATISTICAL ANALYSIS OF FILTRATION RATE AND EFFECTIVE RENAL PLASMA FLOW RELATED TO WEIGHT AND SURFACE AREA IN DOGS	<i>C. Riley Houck</i> 169
ELECTROCARDIOGRAPHIC CHANGES BY HEATING AND COOLING EPICARDIAL AND ENDOCARDIAL SURFACES OF THE DOG VENTRICLE	<i>H. E. Hoff and L. H. Nahum</i> 176
PERCUTANEOUS STIMULATION AND CIRCULATION IN NORMAL AND PARALYZED LOWER EXTREMITIES	<i>Khalil G. Wakim, Jean C. Terrier, Earl C. Elkins and Frank H. Krusen</i> 183
DIURESIS AND UREA PRODUCTION IN THE FASTING DOG	<i>Eric Ogden and Eleanore Tripp</i> 190

No. 2. MAY 1948

HYPERGLYCEMIC EFFECT OF INSULIN	<i>B. Zimmermann and T. J. Donovan</i> 197
RENAL GLUCOGENESIS IN THE EVISCERATED DOG	<i>R. M. Reinecke and P. J. Hauser</i> 205
EFFECT OF CASTRATION AND ANDROGENS ON BODY AND ORGAN WEIGHTS, AND THE ARGINASE AND PHOSPHATASES OF KIDNEY AND LIVER OF THE MALE SYRIAN HAMSTER	<i>C. D. Kochakian, Mary N. Bartlett and J. Gongora</i> 210
PARROT FISH THYROID EXTRACT AND ITS EFFECT UPON OXYGEN CONSUMPTION IN THE FISH, BATHYSTOMA	<i>D. C. Smith and S. A. Matthews</i> 215
CONCENTRATION OF RADIOACTIVE IODINE BY THYROID GLAND OF PARROT FISH	<i>S. A. Matthews and D. C. Smith</i> 222
POTENTIATION OF HYPERTENSIVE EFFECTS OF DCA BY VARIOUS SODIUM SALTS	<i>S. M. Friedman, C. L. Friedman and J. R. Polley</i> 226
ACID AND ALKALINE PHOSPHATASE LEVELS IN CONSECUTIVE SEMEN EJACULATES FROM BULLS	<i>J. T. Reid, G. M. Ward and R. L. Salsbury</i> 235
DOSSES OF HISTAMINE PRODUCING MINIMAL AND MAXIMAL GASTRIC SECRETORY RESPONSES IN DOG AND MAN	<i>M. E. Hanson, M. I. Grossman and A. C. Ivy</i> 242
EFFECT OF D-AMPHETAMINE ON GASTRIC HUNGER CONTRACTIONS AND FOOD INTAKE IN THE DOG	<i>W. Sangster, M. I. Grossman and A. C. Ivy</i> 259
EFFECT OF RESECTION OF MESENTERIC LYMPH NODES ON INTESTINAL FAT ABSORPTION IN THE DOG	<i>B. G. Clarke, A. C. Ivy and David Goodman</i> 264
GASTRIC ABSORPTION OF ETHYL ALCOHOL IN THE RAT	<i>L. Karel and J. H. Fleisher</i> 268
ABSORPTION OF BLOOD FROM THE PERITONEAL CAVITY	<i>G. S. Samuels, G. E. Griffin, E. Muntlyer and S. Seifert</i> 277
SOME FACTORS IN REGULATION OF STROKE VOLUME	<i>W. F. Hamilton and J. W. Remington</i> 287
VOLUME ELASTICITY CHARACTERISTICS OF HUMAN AORTA AND PREDICTION OF STROKE VOLUME FROM PRESSURE PULSE	<i>J. W. Remington, C. R. Noback, W. F. Hamilton and J. J. Gold</i> 298
COMPARISON OF FICK AND DYE INJECTION METHODS OF MEASURING CARDIAC OUTPUT IN MAN	<i>W. F. Hamilton, R. L. Riley, A. M. Attyah, A. Cournand, D. M. Fowle, A. Himmelstein, R. P. Noble, J. W. Remington, D. W. Richards, Jr., N. C. Wheeler and A. C. Witham</i> 309
MEASUREMENT OF CIRCULATING RED-CELL VOLUME WITH METHEMOGLOBIN-TAGGED CELLS	<i>J. C. Moore, O. W. Shadie and H. C. Lawson</i> 322
ADAPTATION OF TAIL PLETHYSMOGRAPH TO BLOOD-PRESSURE MEASUREMENT IN THE MOUSE	<i>H. C. Wu and M. B. Vischer</i> 330
PRESSOR SUBSTANCES IN DOG PLASMA INCUBATED WITH RENIN	<i>Eleanore Tripp and E. Ogden</i> 336
OBSERVATIONS ON THE 'SUSTAINED PRESSOR PRINCIPLE' IN DIFFERENT ANIMAL SPECIES	<i>R. E. Shipley and O. M. Helmer</i> 341
ENZYMATIC CONVERSION OF CYANIDE TO THIOCYANATE	<i>Williamina A. Hinwich and J. P. Saunders</i> 348
EFFECTS OF ANTICHOLINESTERASES ON DIRECT AND INDIRECT STIMULATION OF STRIATED MUSCLE	<i>C. R. Lowe and R. Gesell</i> 355
ELECTROCHEMICAL STUDY OF THE SYNOVIALIS IN DOGS	<i>N. R. Joseph, C. I. Reed, I. E. Steck, F. Folk and E. Kaplan</i> 364
DISTRIBUTION OF K AND NA BETWEEN SERUM AND CERTAIN EXTRA-CELLULAR FLUIDS IN MAN	<i>B. P. Folk, K. L. Zierler and J. L. Lilienthal, Jr.</i> 381
BILE ACIDS AND THEIR CHOLINE SALTS APPLIED TO INNER SURFACE OF ISOLATED COLON AND ILEUM OF THE GUINEA PIG	<i>A. E. Meyer and J. P. McEwen</i> 386

No. 3. JUNE 1948

EFFECT OF NEPHRECTOMY IN THE Eviscerated RAT UPON TOLERANCE FOR INTRAVENOUSLY
ADMINISTERED GLUCOSE *Dwight J. Ingle and James E. Nezamis* 393

EFFECT OF THIOURACIL ON LIVER REGENERATION *Morris J. Fogelman and A. C. Ivy* 397

EFFECT OF ADDED CALCIUM UPON THE INTACT, BLOOD CIRCULATED, TURTLE HEART
A. Sidney Harris and Zeljko Madjerek 402

EFFECT OF ENERGY INTAKE ON HEART RATE IN HYPERTHYROIDISM INDUCED BY FEEDING THYRO-
PROTEIN *J. F. Sykes, T. R. Wrenn, L. A. Moore and J. W. Thomas* 412

THIAMINE DEFICIENCY IN NORMAL RATS AND IN RATS MADE DIABETIC WITH ALLOXAN
Ralph G. Janes and Joan Brady 417

TRYPTOPHANE AND BLOOD SUGAR LEVELS *Fred Howard and Ralph Modlinger* 425

FLAME PHOTOMETER DETERMINATIONS OF SODIUM AND POTASSIUM IN RELATION TO POSSIBLE
INTERFERENCE BY PHOSPHATE *Sumner Shapiro and Hudson Hoagland* 428

HIGH LEVELS OF DIETARY POTASSIUM AND MAGNESIUM AND GROWTH OF RATS *P. B. Pearson* 432

TWO FRACTIONS OF SPECIFIC CHOLINESTERASE PRESENT IN HOMOGENIZED NORMAL MOUSE
BRAIN *J. Maxwell Little* 436

NONEXCRETION OF JAUNDICE-SERUM ALKALINE PHOSPHATASE IN BILE OF NORMAL DOGS
A. Cantarow and L. L. Miller 444

INHIBITION BY HISTAMINASE OF GASTRIC SECRETION IN DOGS
M. I. Grossman and C. R. Robertson 447

UROPEPSIN OUTPUT IN CATS TREATED WITH COFFEE AND HISTAMINE
Gladys R. Bucher and Arthur Anderson 454

EFFECT OF RENIN ON PROTEINURIA AND PAH CLEARANCE AT LOW PLASMA LEVELS
J. Leonard Brandt and John G. Gruhn 458

EXCRETION OF SODIUM AND WATER DURING OSMOTIC DIURESIS IN THE DOG
Laurence G. Wesson, Jr. and W. Parker Anslow, Jr. 465

INFLUENCE OF GASEOUS TRANSFER BETWEEN THE COLON AND BLOOD STREAM ON PERCENTAGE
GAS COMPOSITIONS OF INTESTINAL FLATUS IN MAN *R. S. Pogrund and F. R. Steggerda* 475

NORMAL BLOOD SERUM AND BLOOD SERUM FROM NEOPLASTIC DISEASE ON CELL PROLIFERATION
IN BONE MARROW CULTURES *Earl R. Norris and John J. Majnarich* 483

EFFECT OF XANTHOPTERIN AND OTHER PTERIDINES ON THE RATE OF CELL PROLIFERATION IN
TISSUE CELL CULTURES *Earl R. Norris and John J. Majnarich* 488

EFFECT OF PTERIDINES AND BLOOD SERUM ON NEOPLASTIC CELL CULTURE *in Vitro*
Earl R. Norris and John J. Majnarich 492

EFFECT OF PTERIDINES AND BLOOD SERA ON HUMAN BONE MARROW CELLS *in Vitro*
Earl R. Norris and John J. Majnarich 496

ESTIMATION OF CHANGES IN PLASMA AND EXTRACELLULAR FLUID VOLUME FOLLOWING CHANGES
IN BODY CONTENT OF WATER AND CERTAIN SOLUTES, BY MEANS OF AN OSMOMETRIC EQUA-
TION *A. V. Wolf* 499

CAPILLARY PERMEABILITY: RATE OF TRANSCAPILLARY EXCHANGE OF IRON ADDED TO PLASMA AS
RADIOACTIVE FERRIC BETA₁-GLOBULINATE *Louis B. Flexner, Gilbert J. Vosburgh and Dean B. Cowie* 503

VASOCONSTRICITION AND THE DEVELOPMENT OF IRREVERSIBLE HEMORRHAGIC SHOCK
Harold C. Wiggers, Raymond C. Ingraham, Frank Roemhild and Harold Goldberg 511

OXYGEN SATURATION IN BONE MARROW, AND IN ARTERIAL AND VENOUS BLOOD DURING PRO-
LONGED HEMORRHAGIC ERYTHROPOEISIS *Wilson C. Grant* 521

NATURE OF 'UNIPOLAR' EXTREMITY LEADS IN THE DOG. LEAD VR
L. H. Nahum, H. M. Chernoff and W. Kaufman 529

NATURE OF 'UNIPOLAR' EXTREMITY LEADS IN THE DOG. LEAD VL
L. H. Nahum, H. M. Chernoff and W. Kaufman 540

NATURE OF 'UNIPOLAR' EXTREMITY LEADS IN THE DOG. LEAD VF
L. H. Nahum, H. M. Chernoff and W. Kaufman 547

FACTORS INVOLVED IN THE PRODUCTION OF PAROXYSMAL VENTRICULAR TACHYCARDIA INDUCED
BY EPINEPHRINE *R. Lenel, A. VanLoo, S. Rodbard and L. N. Katz* 553

PRODUCTION OF EXPERIMENTAL HEART FAILURE IN DOGS WITH INTACT CIRCULATION	<i>Albert Roos and John R. Smith</i>	558
JOINT REFLEXES AND REGULATION OF RESPIRATION DURING EXERCISE	<i>Ernest Gardner and John Jacobs</i>	567
EFFECT OF ACID-BASE CHANGES ON EXPERIMENTAL CONVULSIVE SEIZURES	<i>Charles D. Hendley, Horace W. Davenport and James E. P. Toman</i>	580
A STUDY OF THE ADRENOTROPIC RECEPTORS	<i>Raymond P. Ahlquist</i>	586
ACTION OF TETRAETHYLAMMONIUM ON CHEMORECEPTOR AND STRETCH RECEPTOR MECHANISMS	<i>Gordon K. Moe, Luis R. Capo and Braulio Peralta R.</i>	601
PANTOTHENIC ACID AND CARBOHYDRATE METABOLISM IN THE RAT	<i>Leslie Irwin and Elaine P. Ralli</i>	606

JOU

VOLUME

PROOF

TH

HYPPOX

ADREN

ANTIHE

FACTO

B VIT

RAT C

ORALL

C

KIDNE

T

THE

FLUID

T

SEQU

I

PEN

SUSC

MET

REPI

ACET

AGE

ANT

DOS

RES

T

Annual